Measuring and mapping urban growth patterns using remote sensing and GIS techniques

ABSTRACT

Remote sensing and geographic information system techniques are significant and popular approaches that have been used in recent years to measure and map urban growth patterns. This paper primarily aims to provide a basis for a literature review of urban growth measurement and mapping by using different methods. For this purpose, the general characteristics of measuring and mapping urban growth patterns are described and classified. The strengths and weaknesses of the various methods have been identified from an analysis and discussion of the characteristics of the techniques. Results of reviews confirm that combining quantitative and qualitative techniques, such as Shannon approach and change detection, to measure and map urban growth patterns will improve understanding of the phenomenon of urban growth. Moreover, using social and economic data such as population and income data will improve understanding of the relationships between causes and effects. The integration of social and economic factors with quantitative and qualitative techniques will contribute to a perfect evaluation of urban growth patterns and land use changes, taking technical, social, economic, spatial, and temporal factors into account.

Keyword: Urban growth; Urban growth mapping; Urban growth measuring; Remote sensing; GIS